**EPA Incorporation of Dr. Karl Gustavson's (EPA) Technical Comments submitted January 29, 2018**
**Pre-RD Acoustic Fish Tracking Study Field Sampling Plan (FSP) dated January 18, 2018**
**Portland Harbor Superfund Site**

| Comment | How incorporated in EPA comments |
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| 1. Section 2.3. I'd eliminate the size range and say >9". The focus in on adult SMB, so they can get as big as need be. | This comment has been included as EPA Primary Comment 5. |
| 2. Section 2.4. To maximize the potential for the high-resolution array to be useful, these areas should be prioritized for fish collection. | This comment has been included as EPA Primary Comment 6. |
| 3. Section 3.1. I recommend adding Dan Isermann, Univ WI Stevens Point, as the "expert assistance and review". He is the nation's foremost expert on SMB tracking in Large Rivers using the Vemco technologies. | This comment has been included as EPA To Be Considered Comment (TBC) 5. |
| 4. 2.6/4.6.1. SMB are believed to move to spawning and wintering areas. For the purposes of this study, it would not be useful to collect "in-transit" fish as they cannot be reasonably expected to reside within the tracking area. Fish should be collected post-spawning after they have established summer residence. Local fisheries experts would be best suited to inform specific dates, but pre- or during-spawn sampling would not provide an appropriate population sample for the purposes of establishing the home range of resident SMB. | This comment has been included as EPA Primary Comment 7. |
| 5. The receiver deployment array is relatively sparse, increasing the chance that fish will not be "heard" either as it resides in the array or transits beyond the array. The lack of a signal increases the ambiguity of outcome (is a fish gone, or just not heard). How will the system indicate directionality and distance from the gates (has a fish transited from the array and is not heard or is the fish inside the array and not heard)? Different interpretations will provide fundamentally different determinations on residency. | This comment has been included as EPA Primary Comment 3. |
| 6. Missing. Information needs to be provided on a QA/QC plan to document the performance of the monitoring system consistent with the objectives of the program. If the system is intended to provide information on presence or absence of a fish, then diagnostics and tests need to be collected during the course of the study to ascertain the reliability of the data. Simply knowing the receivers are on is not sufficient. For example, if a fish is not detected in the array, qa/qc procedures need to be able to establish that as a true, not false negative. Similarly, QA/QC approaches are needed to establish the accuracy and precision of location data in the high resolution | This comment has been included as EPA Primary Comment 1. |

| Comment | How incorporated in EPA comments |
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| arrays. Approaches should include stationary and mobile tag challenges at routine intervals to establish receiver performance. This is particularly true considering the relatively sparse deployment of receivers which increases the chance that fish will not be “heard” either as they are | |